LWS TR&T Program

D. G. Sibeck
NASA HQ

1. Scope of Program Element

The goal of the Living With a Star (LWS) program is to develop the scientific understanding needed for the United States to effectively address those aspects of the connected Sun-Earth system that affect life and society. The LWS Targeted Research and Technology (TR&T) program element solicits proposals leading to a physics-based understanding of the integral system linking the Sun to the Earth both directly and via the heliosphere, magnetosphere, and ionosphere. The program's objectives can be achieved by data analysis, theory and modeling, and technology improvements (e.g., software tools and instrument development). LWS is a cross-cutting initiative whose goals and objectives relate to all five of NASA's Strategic Enterprises, namely:

Aerospace Technology - LWS characterizes those aspects of the Earth's radiation belt environment needed to design reliable electronic subsystems for use in air and space transportation systems;

Biological and Physical Research – LWS defines the environment beyond the Earth's magnetosphere to enable exploration of interplanetary space by humans;

Earth Science - LWS improves our understanding of the effects of solar variability and disturbances on terrestrial climate change;

Human Exploration and Development of Space - LWS develops the knowledge needed to predict solar energetic particle events that affect the safety of humans in space; and

Space Science - LWS quantifies the physics, dynamics, and behavior of the Sun-Earth system over the 11-year solar cycle.

Research Categories

- 1. Science Understanding
- 2. Tools
- 3. Instrument Development
- 4. Space Climate/Environment
- 5. Space Effects on Terrestrial Climate

2002 Results

- Science Understanding 27
- Tools 3
- Instrument 4
- Space Climate 6
- Climate 4

Success Rate: 2002

	#Rev	#Sel	%	$Req	$Rec	%
Solar	27	13	48%	$10.8	$5.1	47%
Helio	19	8	42%	$6.6	$2.7	40%
Mag	44	16	36%	$13.5	$5.0	37%
ITM	13	3	23%	$4.2	0.7	17%
Clim.	9	4	44%	$2.6	$1.1	41%

History

	0/Obs	0/Mod	1/Obs	1/Mod	2/Obs	2/Mod
Solar	2	1	3	1	10	0
S/H	5	3	3	2	4	0
Helio	10	1	4	1	2	1
SW/M	4	1	4	5	1	2
Mag	9	0	4	2	4	4
M-I	3	1	2	1	1	3
ITM	0	2	0	3	2	0
Data	2	0	0	0	2	0
Clim.	12	3	5	4	5	0
Inst	1	0	4	0	4	0

Type of Award: 2002

- Grant (University) 26
- IAT (e.g. NOAA) 5
- Other Grant (nonprofit) 5
- RTOP (NASA) 4
- Contract (Company) 3

Highly Ranked Proposals

- 1. The Collaborative Sun-Earth Connector (Hurlburt- Lockheed/Martin)
- 2. Energetic particle acceleration at CME shocks (Lario- JHU/APL)
- 3. Solar cycle variability of geosynchronous plasma spectra (Thomsen - LANL)
- 4. Solar-induced variations in polar mesospheric clouds (Thomas- U Colorado)

2002 Proposals

- http://research.hq.nasa.gov/code_s/nra/current/NRA-00-OSS-01/LWSabstracts.html
- http://research.hq.nasa.gov/code_s/nra/current/NRA-01-OSS-01-LWS/winners.html
- http://research.hq.nasa.gov/code_s/nra/current/NRA-02-OSS-01-LWS/winners.html

Future Plans

- We plan to provide links to data products, tools, models, and annual reports from a site at GSFC:

lws.gsfc.nasa.gov

Future NRAs will Emphasize Specific Topics

- 1. One solar/heliosphere.
- 2. One heliosphere
- 3. One solar wind/magnetosphere
- 4. One ionosphere
- 5. One sun-climate